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A new species of *Toumeyella* Cockerell (Hemiptera: Coccidae) on *Myrtillocactus geometrizans* (Cactaceae) from Mexico with a checklist of known species of *Toumeyella* in the world

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A new species of *Toumeyella* Cockerell (Hemiptera: Coccidae) on *Myrtillocactus geometrizans* (Cactaceae) from Mexico with a checklist of known species of *Toumeyella* in the world

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Abstract. A new species of soft scale from Mexico, *Toumeyella martinezi* Kondo and Gonzalez **sp. nov.** (Hemiptera: Coccoidea: Coccidae) collected on *Myrtillocactus geometrizans* (Mart. ex Pfeiff.) Console (Cactaceae) is described and illustrated. An updated taxonomic key to the soft scale insects of the genus *Toumeyella* Cockerell known from Mexico is provided. A list of all currently known species of *Toumeyella* worldwide is given.

Keywords. Garambullo, coccid, soft scales, *Toumeyella martinezi*.

Resumen. Una nueva especie de escama blanda de México, *Toumeyella martinezi* Kondo y Gonzalez **sp. nov.** (Hemiptera: Coccoidea: Coccidae) colectada sobre *Myrtillocactus geometrizans* (Mart. ex Pfeiff.) Console (Cactaceae) es descrita e ilustrada. Se provee una clave taxonómica actualizada para las especies de escamas blandas del género *Toumeyella* Cockerell registradas en México. Se presenta un listado de todas las especies de *Toumeyella* actualmente conocidas en el mundo.

Palabras clave. Garambullo, cóccido escama blanda, *Toumeyella martinezi*.

Introduction

Myrtillocactus geometrizans (Mart. ex Pfeiff) Console (Cactaceae) is a columnar plant, usually 4 m in height and endemic to Mexico (Hernández et al. 2007); with a wide distribution in the central region of Mexico including the States of Guanajuato, Guerrero, Hidalgo, Michoacan, Nuevo Leon (northern region), Oaxaca, Puebla, Queretaro, San Luis Potosi, Tamaulipas (southern region), Veracruz and Zacatecas (Bravo-Hollis 1978). The fruits of this cactus have a sweet-sour flavor and are used to prepare drinks (e.g., juice), jelly, and for consumption as fresh or dried fruit (Bravo-Hollis 1978). There are few reports of scale insects attacking *M. geometrizans*. Two mealybug species (Hemiptera: Pseudococcidae), namely *Vryburgia brevicruris* (McKenzie) in Sacramento, California, USA (McKenzie 1967) and *Spilococcus mamillariae* (Bouche) in Berkeley, California, USA, have been collected on *M. geometrizans* (McKenzie 1960, 1967). The records of *M. geometrizans* reported for California are likely from cultivated plants.

Until 2011, there were 15 species of soft scale insects included in the genus *Toumeyella* Cockerell (Hemiptera: Coccidae), distributed in Brazil (2 spp.), Cuba (1 sp.), Mexico (5 spp.) and the United States (9 spp.) (Kondo and Pellizzari 2011). Later, Granara de Willink (2012) transferred *Mesolecanium ferum* Hempel, 1920, to the genus *Toumeyella* as *T. ferum* (Hempel), and more recently, *Toumeyella coffeae* Kondo, 2013, was described based on specimens collected on the roots of coffee from Colombia and Venezuela (Kondo 2013), increasing the number of species of *Toumeyella* to 17 worldwide.

The five species of *Toumeyella* hitherto recorded from Mexico are namely *T. erythrinae* Kondo and Williams 2003a, *T. fontanai* Kondo and Pellizzari 2011, *T. mirabilis* (Cockerell 1895), *T. parvicornis* (Cockerell 1897a) and *T. sallei* (Signoret 1873) (Kondo and Pellizzari 2011). For additional information on the soft scales of the genus *Toumeyella* known from Mexico also see Kondo and Pellizzari (2011). Here we describe and illustrate a new species of soft scale insect found on *Myrtillocactus geometrizans* (Cactaceae) and provide an updated key to the six *Toumeyella* species known from Mexico. A list of all currently known soft scale insects of the genus *Toumeyella*, with information on their geographical distribution, host plants, with brief notes for each species are given.

Materials and Methods

Specimens of the soft scale were slide-mounted following the procedure described by Williams and Granara de Willink (1992). The terminology of morphological features follows that of Kondo and Pellizzari (2011). The illustration of the adult female (Fig. 2) shows the dorsum on the left and the venter on the right side with enlargements of important features around the margin. Abbreviations of enlargements in figure 2 as follows: aplt = anal plate; ant = antenna; dmic = dorsal microduct; dset = dorsal setae; mset = marginal setae; sp = simple pore; pdp = pregenital disc-pore; prop = preopercular pores; spdp = spiracular disc-pore; spset = spiracular setae; vmic = ventral microduct; vset = ventral setae; vtd = ventral tubular duct.

Depositories

CNIN Instituto de Biología, Departamento de Zoología, Universidad Autónoma de México, Apartado Postal 70-153, Mexico city, D.F. 04510, Mexico.

USNM United States National Entomological Collection, U.S. National Museum of Natural History, Washington D.C., USA.

Results

Genus *TOUMEYELLA* Cockerell

Type Species. *Lecanium* (*Toumeyella*) *mirabile* Cockerell, 1895: 2.

Taxonomic key to the *Toumeyella* species of Mexico based on the adult female (modified from Kondo and Pellizzari 2011).

1. With aggregations of 2–15 fused bilocular pores scattered over dorsum ..... ***Toumeyella parvicornis* (Cockerell)**
— Without such aggregations of bilocular pores scattered over dorsum **2**

2(1). Width of posterior spiracular peritreme about same length or longer than length of anal plates; anal ring with 12–14 setae ..... ***Toumeyella erythrinae* Kondo and Williams**
— Width of posterior spiracular peritreme much shorter than length of anal plates; anal ring with 10 setae **3**

3(2). Spiracular pore bands widening broadly towards body margin, about 30–50 pores wide at broadest point **4**
— Spiracular pore bands of same width or narrowing near body margin, about 5 pores wide at broadest point **5**

4(3). Spiracular clefts present, well developed; spiracular setae well differentiated from marginal setae, numbering 3 per spiracular cleft ..... ***Toumeyella sallei* (Signoret)**

— Spiracular clefts absent; spiracular setae absent or not differentiated from marginal setae .... ***Toumeyella mirabilis*** **(Cockerell)**

5(3). Antennae 7 segmented. Spiracular pore bands narrowing from each spiracle to spiracular cleft. Preopercular pores present in mid-dorsal line extending from area anterior to anal plates to head near margin, and also scattered throughout most of dorsum, but absent from margin and submargin; on *Acacia* (Fabaceae) ..... ***Toumeyella fontanai*** **Kondo and Pellizzari**

— Antennae 5 or 6 segmented. Spiracular pore bands of same width from each spiracle to spiracular cleft. Preopercular pores present in a mid-dorsal line extending from area anterior to anal plates up to mid dorsum, absent elsewhere; on *Myrtillocactus* (Cactaceae) .... ***Toumeyella martinezi*** **Kondo and Gonzalez, sp. nov.**

Toumeyella martinezi **Kondo and Gonzalez, sp. nov.**

Description. Adult female (Fig. 1 and 2).

Proposed common name: English: Garambullo cactus soft scale. **Spanish:** Escama blanda del garambullo.

Material studied. Holotype: adult female (CNIN). **Mexico:** state of Hidalgo, Huichapan, Zequetepe, vii.2011, coll. Diana Martinez, ex *Myrtillocactus geometrizans* (Mart. ex Pfeiff.) Console (Cactaceae). **Paratypes:** same data as holotype 4 adult females (CNIN), 3 adult females (USNM).

Unmounted material. (Fig. 1) Body convex, round in shape. Derm pale green in color, with a darker green marginal band; mid dorsum lighter in color, orange to orange-brown, with two darker green mid dorsal parallel lines; anal plates dark-brown (Fig. 1A). Adult females becoming dark to reddish-brown (Fig. 1B).

Mounted material. (Fig. 2) Body outline elongate oval, body 4.2–7.2 mm long, 3.1–5.7 mm wide.

Dorsum. Derm membranous. Dorsal setae sharply spinose, straight or curved, each 10–18 µm long, evenly scattered. Dorsal microducts each about 3 µm wide, with a long terminal filament, evenly scattered. Simple pores not detected. Preopercular pores numerous, present in a mid-dorsal line extending from area anterior to anal plates up to mid dorsum, each pore 6.0–11.0 µm wide. Dorsal tubular ducts, tubercles and pocket-like sclerotizations absent. Anal plates together quadrate, with rounded angles, sometimes with notched angles, plates located at about 1/4 of body length from posterior margin, each

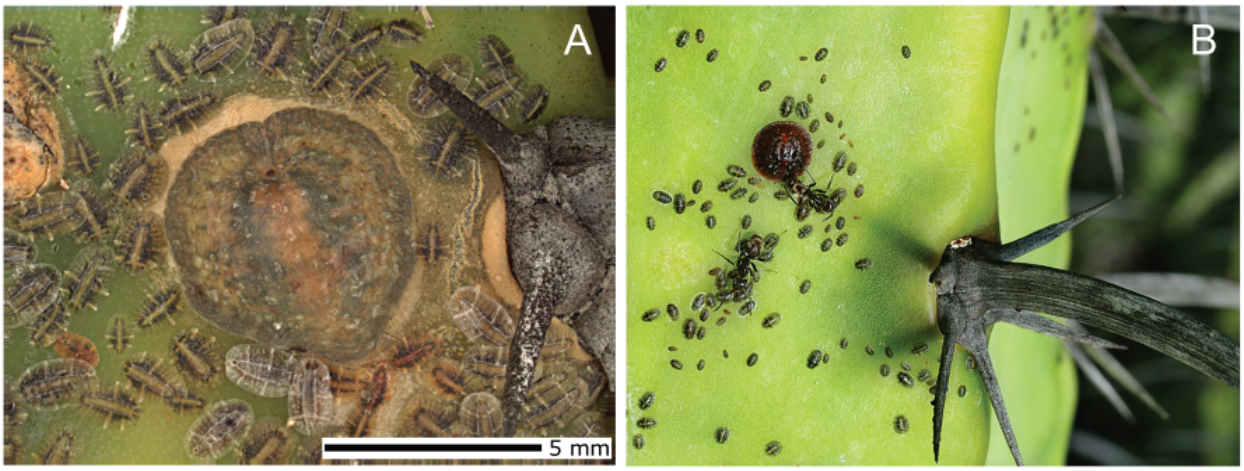

Figure 1. *Toumeyella martinezi* Kondo and Gonzalez on *Myrtillocactus geometrizans*. **A.** Adult female (center) surrounded by first- and second-instar nymphs. **B.** Highly sclerotized old adult female and nymphs tended by the ant *Liometopum apiculatum* Mayr (Zequeteje, Mexico). Photos: A by Jorge M. Valdes Carrasco; B by Jesus Luna.

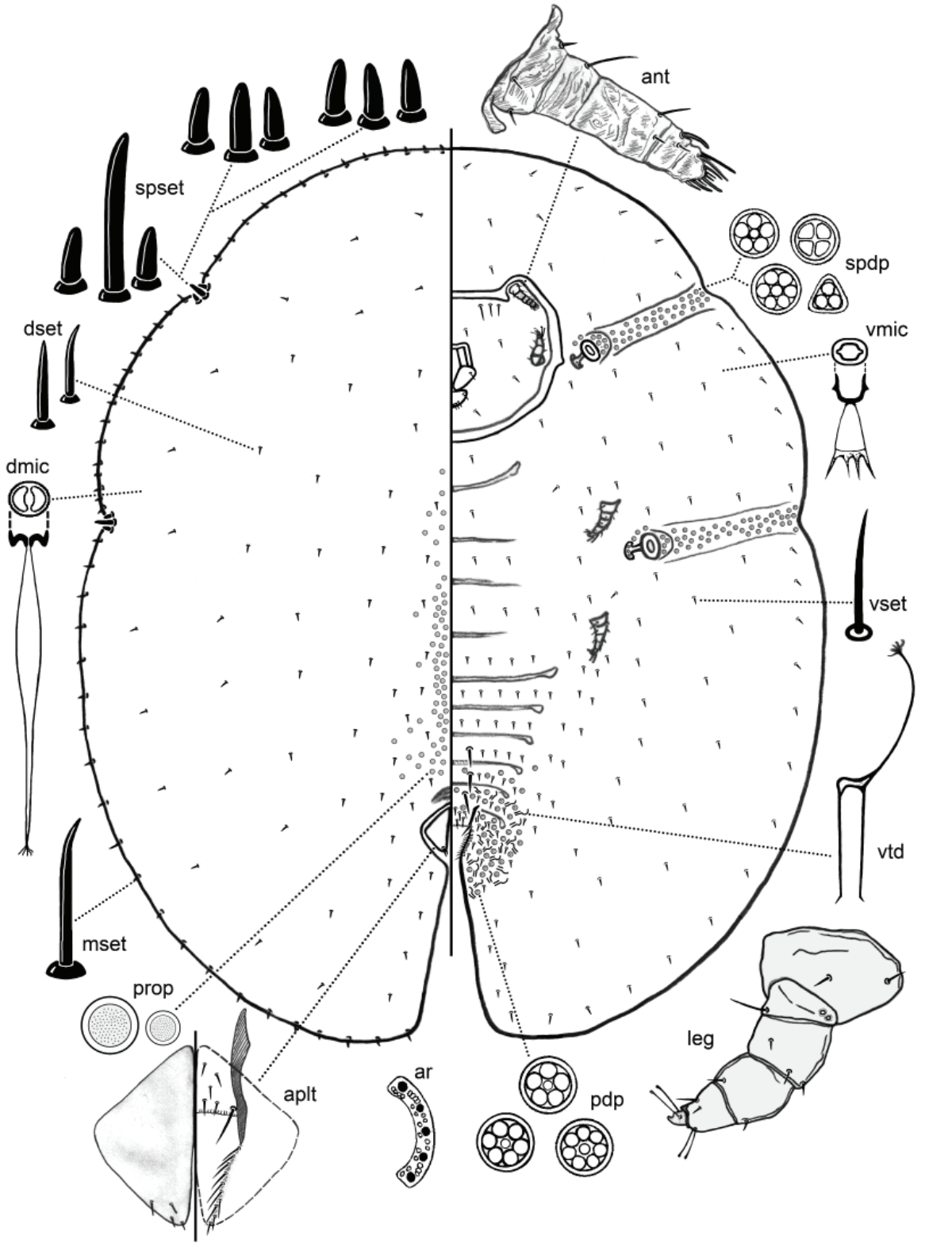

Figure 2. *Toumeyella martinezi* Kondo and Gonzalez, adult female.

plate 205–235 µm long, 125–150 µm wide, anterolateral margin 150–195 µm long, posterolateral margin 150–175 µm long, with 3 or 4 apical setae, 1 pair of long fringe setae, about 8–10 ventral subapical setae and 4–6 hypopygial setae. Anal ring with about 10 setae. A sclerotic area present around anal plates in older specimens.

Margin. Marginal setae bluntly to sharply spinose, straight to slightly bent, each 12.5–25.0 µm long, arranged in a single irregular row, with 10–15 on each side between anterior and posterior spiracular areas. Spiracular clefts shallow, with 2 or 3 spiracular setae per spiracular area, each 17.5–30.0 µm long, all setae subequal in size or median spiracular seta slightly longer than lateral setae. Eyes not detected.

Venter. Derm entirely membranous. Pregenital disc-pores each 6–7 µm wide, mostly with 5–7 loculi, present around vulvar area. Spiracular disc-pores mostly with 6 loculi, with a few pores with 3, 4, and 5 loculi, each pore 4.0–6.5 µm wide, present in a narrow band as wide as spiracular peritremes, extending laterally from each spiracle to body margin. Ventral microducts scattered evenly throughout, each about 2.5 µm wide. Ventral tubular ducts present around vulvar region, each tubular duct with a slender terminal filament ending in a small gland. Ventral setae slender, straight or slightly bent, each 10–18 µm long; also 3 pairs of long median setae, each 20–45 µm long. Spiracles well developed, anterior spiracular peritremes each 85–110 µm wide, posterior peritremes each 100–140 µm wide. Legs greatly reduced, but most segments usually discernible, each segment with few setae, total length each leg 115–215 µm long, claw 12.0–17.5 µm long; metathoracic legs largest; claws with a small denticle, claw digitules, slender, knobbed; tarsal digitules knobbed or spiniform. Antennae short, each 120–193 µm long, 5 or 6 segmented, with fleshy setae present on last two antennal segments. With 3 pairs of interantennal setae. Mouthparts well developed, clypeolabral shield 240–285 µm wide; labium 1 segmented, with 4 pairs of labial setae.

Etymology. The species is named after Diana Y. Martinez-Hernandez, entomologist, who collected the insect.

Notes. The ant *Liometopum apiculatum* Mayr has been observed in a mutualistic relationship with *T. martinezi* sp. nov. on the cactus *M. geometrizans* (D. Y. Martinez-Hernandez, personal communication); the ant feeds on the honeydew excreted by the soft scale and in exchange the ant appears to give protection to the soft scale from its natural enemies as has been reported for other ant species (Way 1963). *Toumeyella martinezi* is commonly found in the middle part of the plant where there is more fresh tissue over the inter-ridges of the plant cladodes (D. Y. Martinez-Hernandez, personal communication). *Toumeyella martinezi* sp. nov. (as *Toumeyella* sp.) is attacked by the parasitoid *Mexidalgus toumeyellus* Myartseva (Hymenoptera: Aphelinidae) (Myartseva et al. 2014). The ant *L. apiculatum*, commonly known as "escamol" in Mexico, is considered as a special food, a delicatessen dish in several Mexican restaurants (Velasco-Corona et al. 2007).

Discussion

The distribution of the genus *Toumeyella* is restricted to the New World with many species described from North America. *Toumeyella* species are mostly oligophagous and usually recorded off members of one or very few families, e.g., the Mexican *Toumeyella* species have been hitherto recorded off Fabaceae (*T. erythrinae, T. mirabilis* and *T. fontanai*), off Pinaceae (*T. parvicornis*), with the type host for *T. sallei* being unknown (Kondo and Pellizzari 2011). *Toumeyella martinezi* is the first record of a species of *Toumeyella* collected on a plant of the family Cactaceae.

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Table 1. Checklist of currently known species of *Toumeyella* Cockerell (Hemiptera: Coccidae) worldwide.

Species and synonymy	Distribution	Host plants	Notes
***Toumeyella cubensis* Heidel and Köhler, 1979: 132**	**Neotropical region:** Cuba (Köhler 1979).	**Rutaceae:** *Citrus sinensis* (Köhler 1979).	*Toumeyella lignumvitae* cannot readily be separated from *T. cubensis* (Williams and Kondo 2008).
***Toumeyella erythrinae* Kondo and Williams, 2003a: 12**	**Nearctic region:** Mexico (Kondo and Williams 2003a).	**Fabaceae:** *Erythrina coralloides, Erythrina* sp. (Kondo and Williams 2003a; Kondo and Pellizzari 2011).	This is a serious pest of coral tree *E. coralloides*, a common street tree in Mexico city (Kondo and Williams 2003).
***Toumeyella ferum* (Hempel, 1920: 350)** [*Mesolecanium ferum* Hempel, 1920: 350. / *Toumeyella ferum;* Granara de Willink, 2012: 7. Change of combination]	**Neotropical region:** Brazil (Hempel 1920).	**Euphorbiaceae:** *Croton floribundus* (Hempel 1920).	The illustration of *T. ferum* by Granara de Willink (2012), which corresponds to Figure 6 was mislabeled as *Mesolecanium baccharidis* (Cockerell). Errata were published on 22 March 2013.
***Toumeyella fontanai* Kondo and Pellizzari, 2011: 229.**	**Nearctic region:** Mexico (Kondo and Pellizzari 2011).	**Fabaceae:** *Acacia* sp. (Kondo and Pellizzari 2011).	The species was described based on a single specimen on a tree branch of *Acacia* sp. also infested by *Coccus longulus* (Douglas) (Kondo and Pellizzari 2011).
***Toumeyella lignumvitae* Williams, 1993: 566.**	**Nearctic region:** USA (Williams 1993).	**Zygophyllaceae:** *Guaiacum sanctum* (Williams 1993).	See notes under *T. cubensis* above.
***Toumeyella liriodendri* (Gmelin, 1790: 2220)** [*Coccus liriodendron* Goeze, 1778: 343. Synonymy by Williams and Kondo, 2009: 69 / Williams and Kondo (2009: 69) designated this name as a *nomen oblitum* / *Coccus liriodendri* Gmelin, 1790: 2220. Williams and Kondo (2009: 69) designated this species as *nomen protectum* / *Lecanium tulipiferae* Cook, 1878: 192. Synonymy by King, 1902: 59 / *Lecanium liriodendri*; Cockerell, 1899: 271. Change of combination / *Eulecanium liriodendri*; Fernald, 1903: 190. Change of combination / *Toumeyella liriodendri*; Sanders, 1909: 447. Change of combination / *Lecanium* (*Toumeyella*) *liriodendri*; Pettit and McDaniel, 1920: 10.	**Nearctic region:** USA (Ben-Dov et al. 2014; Kondo and Williams 2008; King 1903). **Neotropical region:** Cuba (Mestre et al. 2011).	**Fabaceae:** *Cassia fasciculata*. **Juglandaceae:** *Carya cordiformis* (Hamon and Williams 1984). **Magnoliaceae:** *Liriodendron tulipifera* (Dietz and Morrison 1916; Miller and Williams 1995; Kondo and Williams 2008), *Magnolia acuminata* (Williams and Kosztarab 1972), *M. fuscata*, *M. grandiflora* (Miller and Williams 1995), *M. soulangeana* (Gill 1988), *M. stellata* (Williams and Kosztarab 1972; Miller and Williams 1995), *M. virginiana* (Williams and Kosztarab 1972), *Michelia* sp. (Gill 1988). **Malvaceae:** *Sida spinosa* (Hamon and Williams 1984). **Rubiaceae:** *Cephalanthus* sp., *Gardenia* sp. (Gill 1988). **Salicaceae:** *Casearia aculeata* (Mestre et al. 2011), *Populus* sp. (Williams and Kosztarab 1972). **Sapindaceae:** *Allophylus cominia* (Mestre et al. 2011). **Theaceae:** *Gordonia* sp. (Gill1 1988). **Tiliaceae:** *Tilia* sp. (Gill 1988).	Kondo and Williams (2008) redescribed the species and designated a Neotype based on specimens collected from its native range and its type host, *L. tulipifera*. The record of *T. liriodendri* on *Cephalantus* sp. could be a misidentification of *Neotoumeyella cephalanthi* Kondo and Williams, a common species on that host (Kondo and Williams 2009). *Toumeyella liriodendri* has been recorded on the roots of coffee in Guatemala (Barrera 2008), but this is likely a misidentification since *T. liriodendri* is a North American species that feeds on the aerial parts of its host (Kondo 2013). Hamon and Williams (1984) listed *Ascyrum* spp. and *Hypericum cistifolium* (Clusiaceae) as hosts of *T. liriodendri*, however, these are likely records of an undescribed species (M.L. Williams, personal communication).
***Toumeyella mirabilis* (Cockerell, 1895: 56)** [*Lecanium* (*Toumeyella*) *mirabile* Cockerell, 1895: 56 / *Toumeyella mirabilis*; Cockerell, 1902: 452. Change of combination]	**Nearctic region:** Mexico (Cockerell 1899; Ferris 1921; Ferris and Kelly 1923); USA (Cockerell 1895, 1899; Ferris 1919, 1921; Hodgson 1994).	**Asteraceae:** *Xanthocephalum* sp. (Hodgson 1994). **Fabaceae:** *Bauhinia macrantha* (Cockerell 1895), *Prosopis juliflora glandulosa* (Ferris 1919, 1921), *P. velutina* (Miller and Williams 1995), *Prosopis* sp. (Cockerell 1899; Ferris 1921; Ferris and Kelly 1923; Hodgson 1994).	*Toumeyella mirabilis* is the type species of the genus. This species is unusual in that it generally lacks differentiated spiracular setae, although some specimens will occasionally have a single thicker seta in the spiracular area (Williams and Kondo 2008).

Species and synonymy	Distribution	Host plants	Notes
***Toumeyella nectandrae* Hempel, 1929: 64.**	**Neotropical region:** Brazil (Hempel 1929).	**Lauraceae:** *Nectandra grandiflora* (Hempel 1929).	Only known from Brazil.
***Toumeyella parvicornis* (Cockerell, 1897a: 90)** [*Lecanium parvicorne* Cockerell, 1897a: 90 / *Toumeyella parvicornis*; Cockerell, 1902: 452. Change of combination / *Lecanium* (*Toumeyella*) *numismaticum* Pettit and McDaniel, 1920: 8. Synonymy by Williams and Kosztarab, 1972: 171]	**Nearctic region:** Canada (Bradley 1973), Mexico (Myartseva and Ruíz-Cancino 2000), USA (Ben-Dov et al. 2014; Cockerell 1897a; Clarke et al. 1992; Stimmel 1984). **Neotropical region:** Puerto Rico, Turks and Caicos Islands (Malumphy et al. 2012).	**Pinaceae:** *Pinus caribaea* var. *bahamensis* (Malumphy et al. 2012), *P. australis* (Cockerell 1897a), *P. banksiana* (Bradley 1973), *P. echinata* (Williams and Kosztarab 1972), *P. elliotti*, *P. glabra* (Hamon and Williams 1984), *P. mugo*, *P. palustris* (Williams and Kosztarab 1972), *P. sylvestris* (Williams and Kosztarab 1972; Miller and Williams 1995), *P. taeda* (Cockerell 1897a; Miller and Williams 1995), *P. virginiana* (Williams and Kosztarab 1972; Miller and Williams 1995).	*Toumeyella parvicornis* differs from all other species in the genus by having aggregations of 2-15 fused bilocular pores which are scattered over the dorsum (Kondo and Pellizzari 2011; Williams and Kondo 2008). The morphology of *T. parvicornis* differs depending on the feeding site, having bark and leaf forms (Hamon and Williams 1984; Williams and Kondo 2008). An occasional pest of pine seedlings and saplings (Hamon and Williams 1984).
***Toumeyella paulista* Hempel, 1932: 330.**	**Neotropical region:** Brazil (Hempel 1932).	**Lauraceae:** *Nectandra* sp. (Hempel 1932).	*Toumeyella paulista* is only known from Sao Paulo, Brazil, on *Nectandra* sp. (Lauraceae) (Williams and Kondo 2008).
***Toumeyella pini* (King, 1901: 334)** [*Lecanium pini* King, 1901: 334 / *Toumeyella pini*; Cockerell, 1902: 452. Change of combination / *Lecanium corrugatum* Thro, 1903: 216. Synonymy by Fernald, 1903: 179 / *Lecanium* (*Toumeyella*) *corrugatum*; Pettit and McDaniel, 1920: 6 / *Lecanium* (*Toumeyella*) *corrugatum neglectum* Pettit and McDaniel, 1920: 7. Synonymy by Ben-Dov, Hodgson and Miller, 1997: 202 / *Toumeyella corrugatum neglectum*; Williams and Kosztarab, 1972: 182. Change of combination]	**Nearctic region:** Canada (King 1901), USA (Clarke et al. 1992; Kosztarab 1996; Williams and Kosztarab 1972).	**Pinaceae:** *Pinus austriaca* (King 1901), *P. echinata* (Williams and Kosztarab 1972), *P. eliottii* (Miller and Williams 1995), *P. mugo* (Williams and Kosztarab 1972), *P. palustris* (Hamon and Williams 1984), *P. resinosa*, *P. rigida* (Williams and Kosztarab 1972), *P. serotina* (Hamon and Williams 1984), *P. sylvestris* (Thro 1903), *P. taeda* (Hamon and Williams 1984; Miller and Williams 1995), *P. virginiana* (Williams and Kosztarab 1972), *Pinus* sp. (Pettit and McDaniel 1920).	*Toumeyella pini* has been reported on numerous pine species. The characteristic large conical preopercular pores in *T. pini* will readily separate it from any other species of *Toumeyella* on pines (Williams and Kondo 2008). It has three generations per year on *P. taeda* in Georgia, USA (Clarke et al. 1989).
***Toumeyella pinicola* Ferris, 1920: 41.**	**Nearctic region:** USA (Ferris 1920; Brown and Eads 1967).	**Pinaceae:** *Pinus radiata* (Ferris 1920; Miller and Williams 1995).	*Toumeyella pinicola* is known only from San Mateo County, California, USA (Williams and Kondo 2008).
***Toumeyella quadrifasciata* (Cockerell, 1895: 3)** [*Lecanium quadrifasciatum* Cockerell, 1895: 3 / *Toumeyella quadrifasciata*; Cockerell, 1902: 452. Change of combination]	**Nearctic region:** USA (Ben-Dov et al. 2014; Cockerell 1895).	**Fabaceae:** *Robinia neomexicana* (Cockerell 1895; Miller and Williams 1995).	The species has only been collected on *Robinia neomexicana* in Arizona and New Mexico (Williams and Kondo 2008).
***Toumeyella sallei* (Signoret, 1873: 410)** [*Lecanium sallei* Signoret, 1873: 410 / *Neolecanium sallei*; Cockerell, 1902: 451. Change of combination / *Toumeyella sallei*; Kondo and Williams, 2003b: 211. Change of combination]	**Nearctic region:** Mexico (Signoret 1873). **Neotropical region:** Guatemala (Williams 2010).	**Anacardiaceae:** *Spondias* sp. (Williams 2010). **Fabaceae:** *Erythrina corallodendron*, *Erythrina* sp. (Williams 2010). Undetermined host (Signoret 1873).	*Toumeyella sallei* is a very large soft scale insect, 2.0 cm long, 1.5 cm wide and 0.5 cm tall, rugose on the sides; brownish with some pale shading, a bit yellow (Kondo and Williams 2003b; Signoret 1873).
***Toumeyella turgida* (Cockerell, 1897b: 152)** [*Lecanium turgidum* Cockerell, 1897b: 152 / *Toumeyella turgida*; Cockerell, 1902: 452. Change of combination]	**Nearctic region:** USA (Florida) (Cockerell 1897b; Williams and Kondo 2008).	**Magnoliaceae:** *Magnolia glauca* (Cockerell 1897b).	*Toumeyella turgida* appears to be identical to the tuliptree scale, *T. liriodendri* (Williams and Kondo 2008).
***Toumeyella virginiana* Williams and Kosztarab, 1972: 182.**	**Nearctic region:** USA (Kosztarab 1996).	**Pinaceae:** *Pinus caribaea* (Miller and Williams 1995), *P. clausa*, *P. elliotti*, *P. glabra* (Hamon and Williams 1984), *P. palustris*, *P. taeda*, *P. virginiana* (Williams and Kosztarab 1972).	*Toumeyella virginiana* is unusual among species of *Toumeyella* in having many dorsal setae (15-25) on each anal plate (Williams and Kondo 2008).